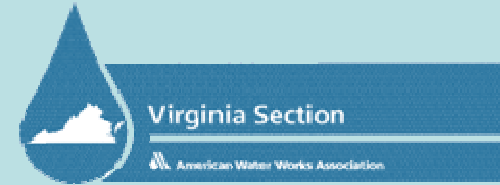


Alternatives



Presented By:
Richard "Dee" Hartman,
Executive Director – Appomattox River Water Authority
- South Central Wastewater Authority
March 28, 2007



Appomattox River Water Authority

City of Petersburg
City of Colonial Heights
Chesterfield County

Dinwiddie County
Prince George County

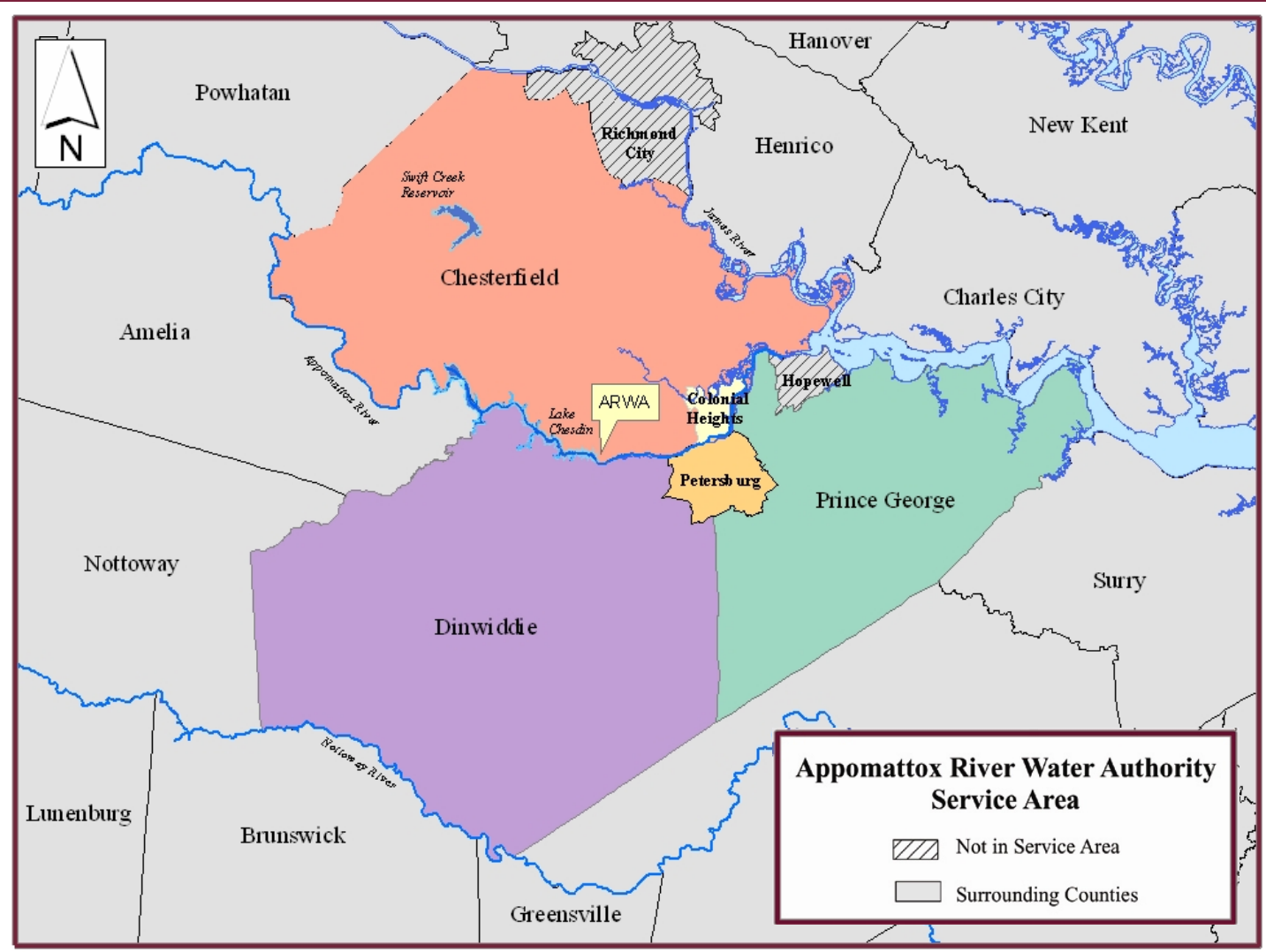


Virginia Section

American Water Works Association



ARWA Service Area



Appomattox River Water Authority



ARWA

- Began January 1968 22 mgd Plant
- 1st Expansion 1985 46 mgd
- 2nd Expansion—now(2006) 96 mgd

- Source
 - Lake Chesdin on Appomattox River
 - Brasfield Dam





ARWA Water Treatment Plant

- ◆ 96 MGD Water Treatment Plant Capacity
- ◆ 55 MGD Average Day Demand - 2055
- ◆ Lake Chesdin
– 58 MGD Safe Yield



F.Y. Demands 05/06

(Average Day)

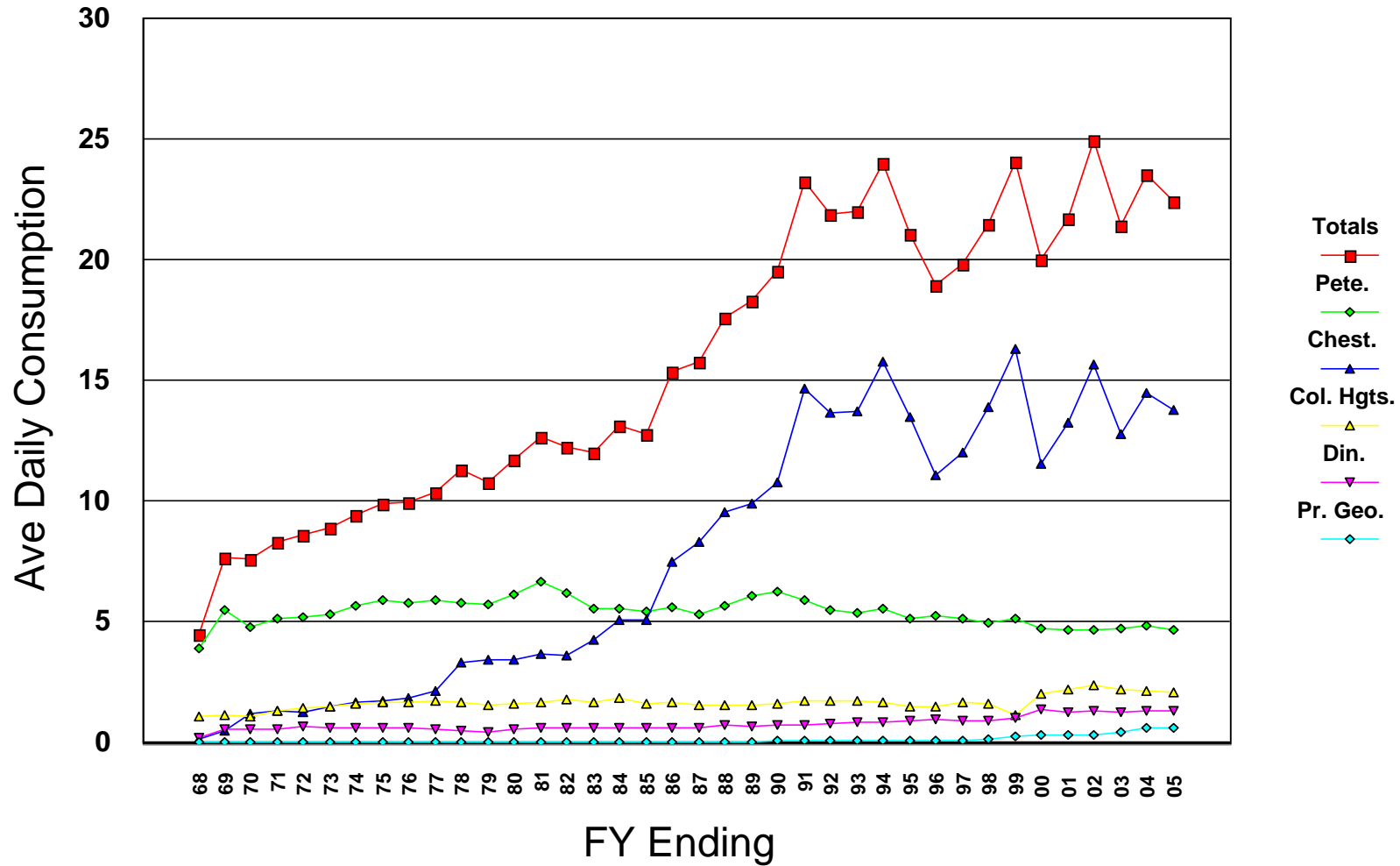
• Colonial Heights	2.25 mgd
• Chesterfield	16.89
• Petersburg	4.47
• Dinwiddie	1.41
• Prince George	<u>0.59</u>
Totals:	25.61 mgd

Peaks = 46 mgd (Plant capacity)

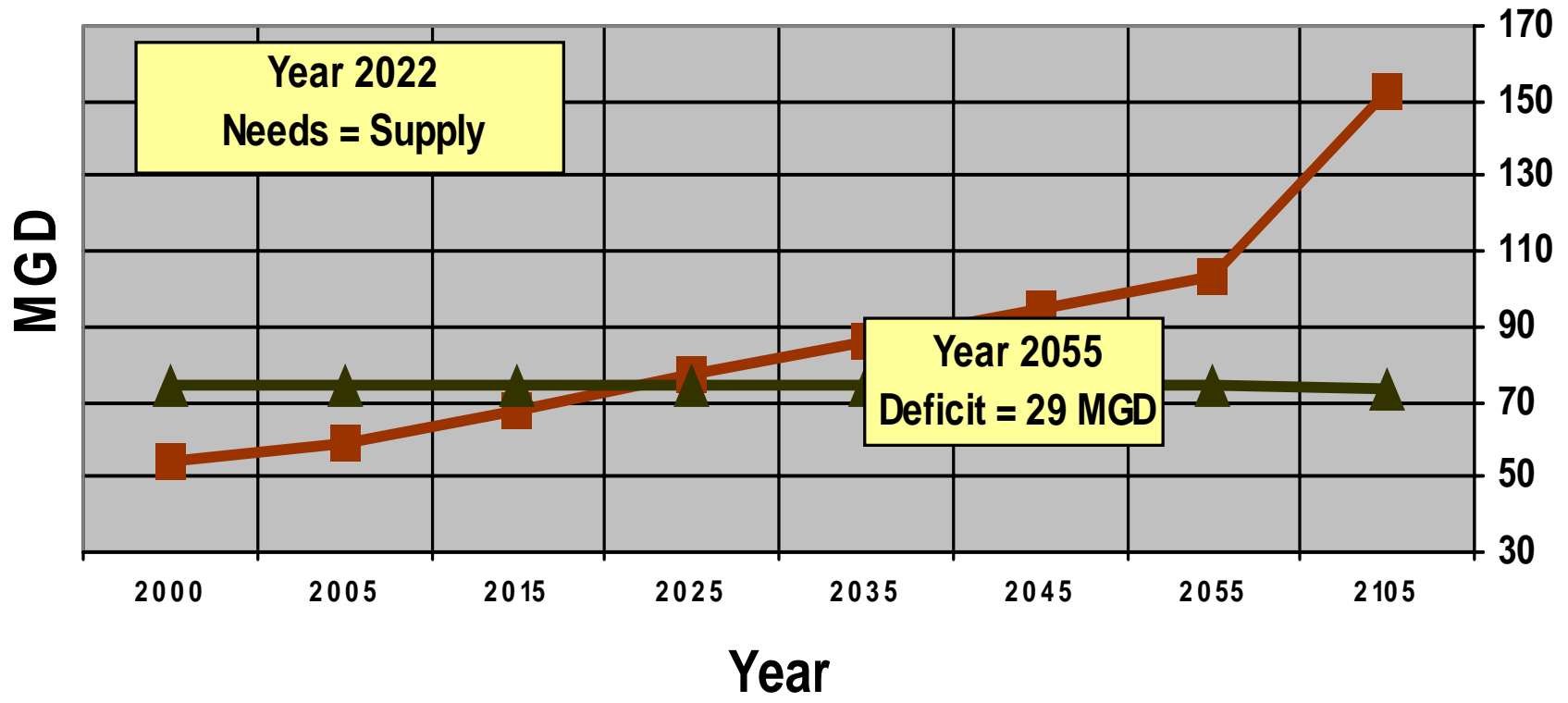


Historical Consumption

January 1968 to June 30, 2005



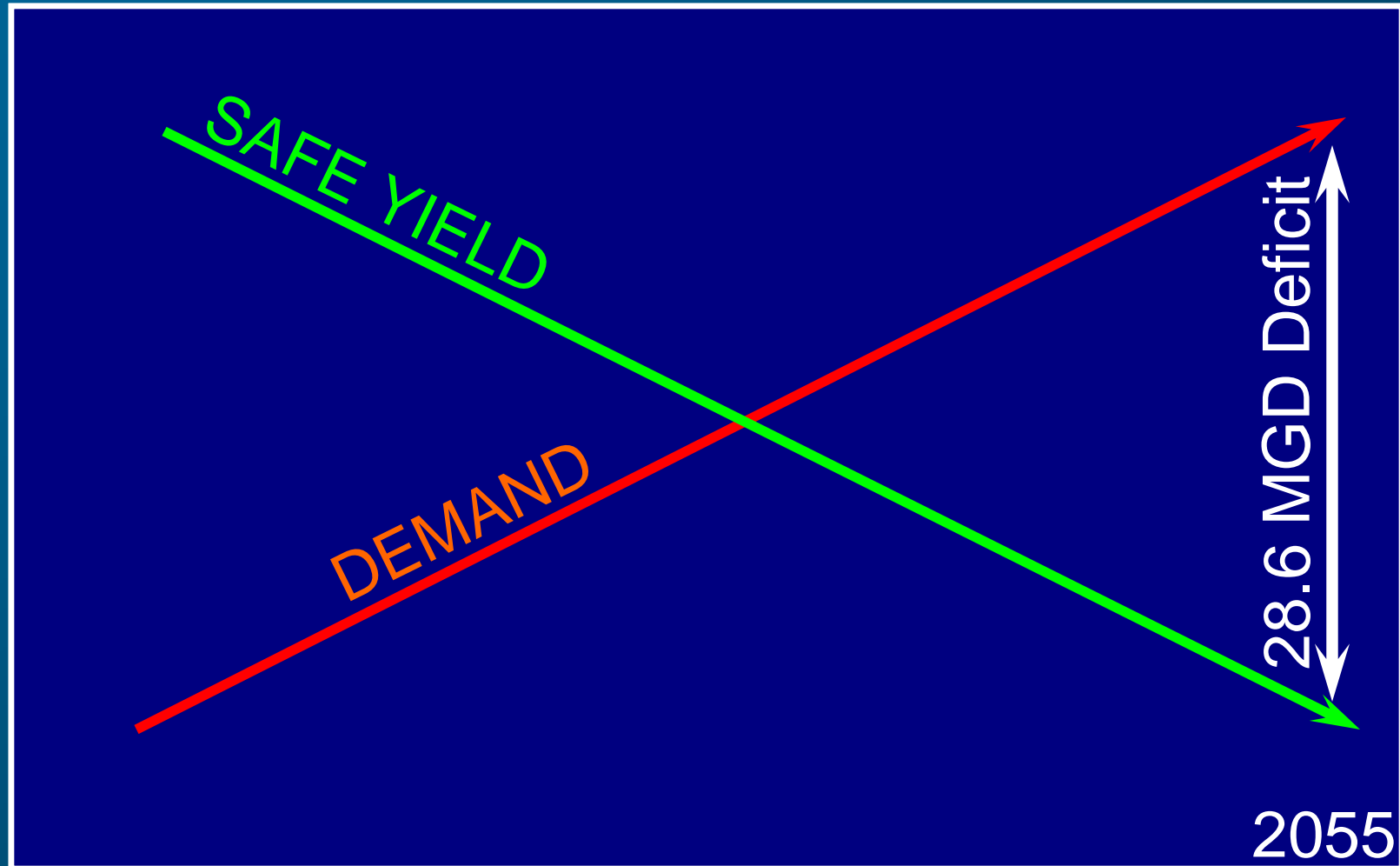
Needs and Resources By Year



■ Total Need ▲ Available Supply Year 2055



2055 Deficit of ~28.6 MGD



2055



Previous Studies

- ◆ **Safe Yield Analysis – Lake Chesdin – 1999**
- ◆ **Service Area Demand Study – 2000**
- ◆ **Identifying and Screening Pump Storage Dam Sites – 2001**
- ◆ **ARWA Members' Needs Assessment - 2003**



Needs Analysis

- First Step – do you need more water?
- Needs analysis
- =/ $<$ 50 year need - planning horizon
- Present source capability
- Guides – Health Dept, Corps & DEQ
- If you have a need.....what are the...



Alternatives

- Think of all possibilities



Alternatives

- National Environmental Policy Act – NEPA
- Environmental Impact Statement – EIS
- 404(b)(1) Guidelines
- http://ceres.ca.gov/wetlands/permitting/404/epa_guidelines_230.html#230.1
- “Least environmentally damaging”
- Consequences of the project

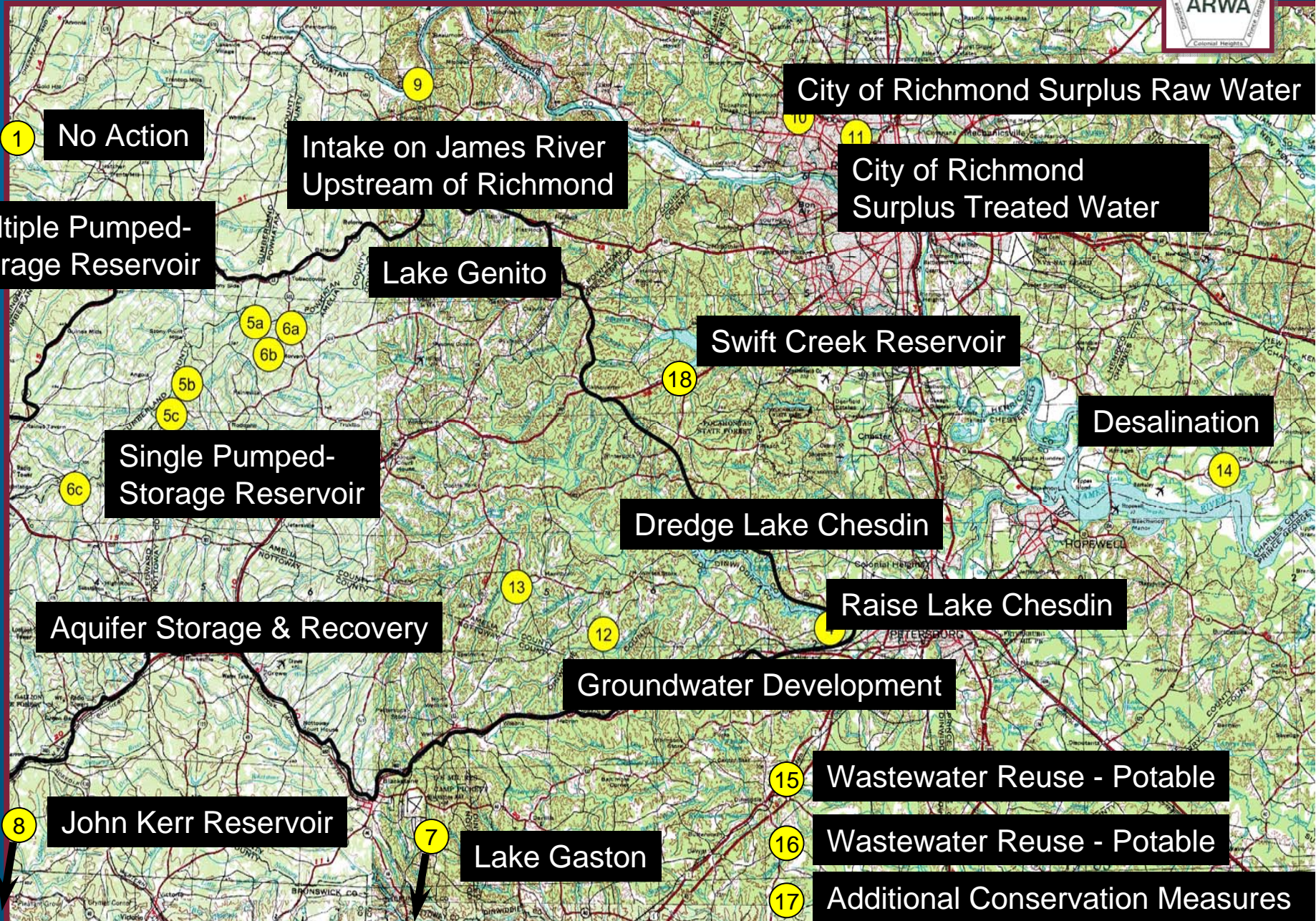
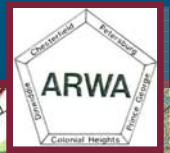


Generic Alternatives

- Desalination
- Wells/ground water
- Excess water from others
- Existing reservoirs in area
- New reservoirs
- Enlarging existing reservoir/source
- Raising existing dam
- Dredging existing reservoir
- Aquifer recharging



Considered Alternatives:



1 No Action

2 Intake on James River Upstream of Richmond

3 City of Richmond Surplus Raw Water

4 City of Richmond Surplus Treated Water

5 Multiple Pumped-Storage Reservoir

6 Lake Genito

7 Swift Creek Reservoir

8 Desalination

9 Single Pumped-Storage Reservoir

10 Dredge Lake Chesdin

11 Raise Lake Chesdin

12 Aquifer Storage & Recovery

13 Groundwater Development

14 John Kerr Reservoir

15 Lake Gaston

16 Wastewater Reuse - Potable

17 Wastewater Reuse - Potable

18 Additional Conservation Measures



ARWA Found 17 Alternatives

- 1. No Action/ no build
- 2. Lake Genito – up stream reservoir
- 3. Raise Lake Chesdin
- 4. Dredge Lake Chesdin
- 5. Large side stream reservoir – pump storage
- 6. Multiple side stream reservoirs
- 7. Pump from Kerr Reservoir
- 8. Lake Gaston





- 9. Intake on James River ^{above} Richmond
- 10. City of Richmond excess raw water
- 11. Richmond excess finished water
- 12. Groundwater
- 13. Aquifer storage & recovery
- 14. Desalination of James @ Hopewell
- 15. Waste water reuse as source
- 16. Waste water for non-potable use
- 17. Conservation

Alternatives – Considerations

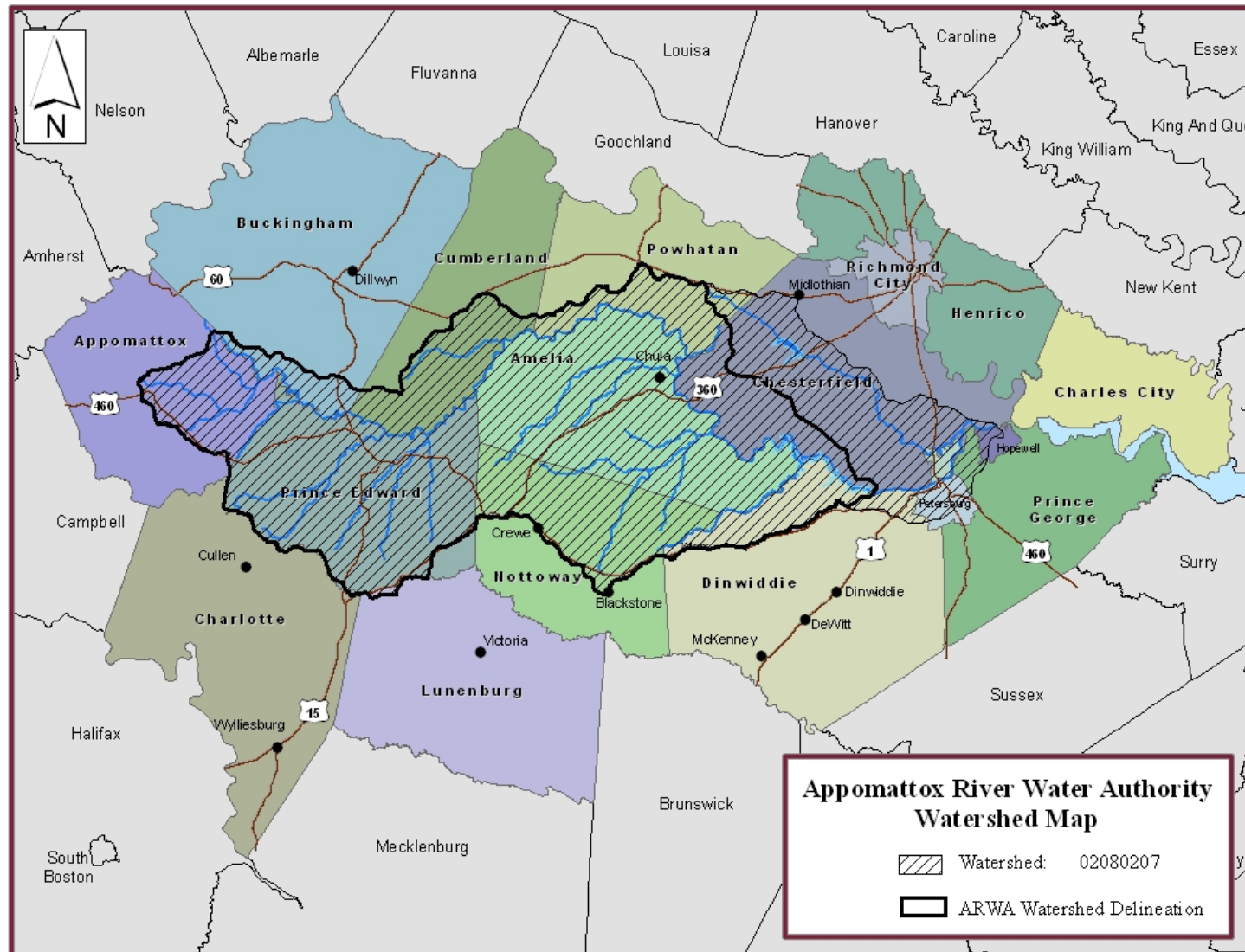
- Cost
- Environmental Impacts-stream & wetlands
“Least damaging alternative”
- Cultural Impacts
- Historical/Archaeological survey
- Physical impacts – houses, roads, etc.
- Citizen opposition
- No build choice



Other Considerations

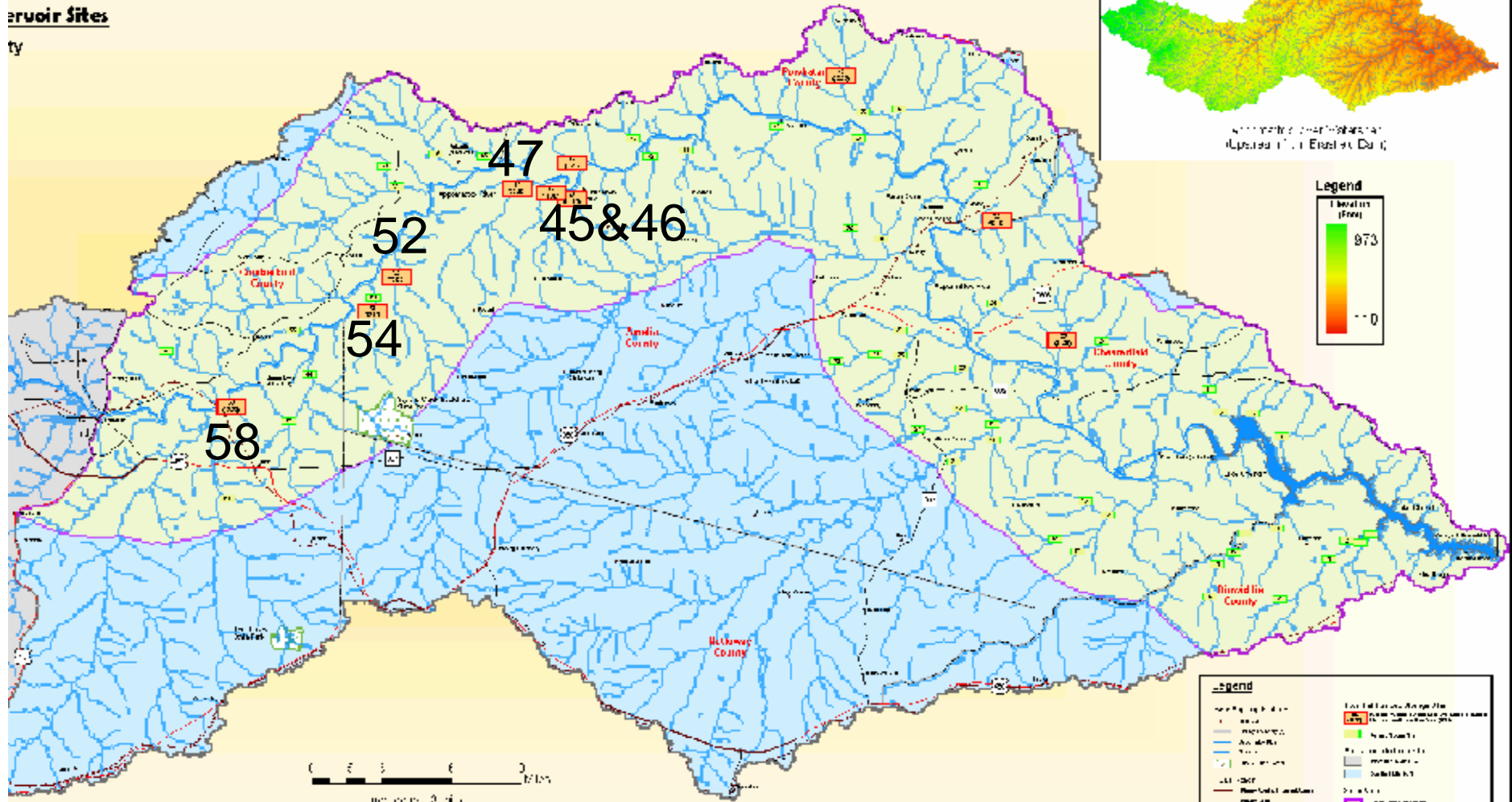
- Aerial survey – better estimating
- Boundary survey – impacts
 - Access to properties
 - Future negotiations with property owners
 - Plats & purchase of land
- Geotechnical survey – dam site ok?
- Corps permit
- Site visit



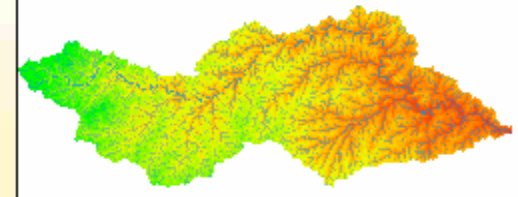


Reservoir Sites

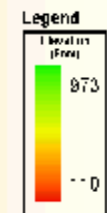
County



Upper Meritt Flood



Upper Meritt Dam



ARWA Reviewed



- **63 Potential Sites Evaluated**
- **Objectives:**
 - **Minimize Project Costs**
 - **Optimize Water Supply Yield**
 - **Minimize Adverse Cultural and Environmental Impacts**



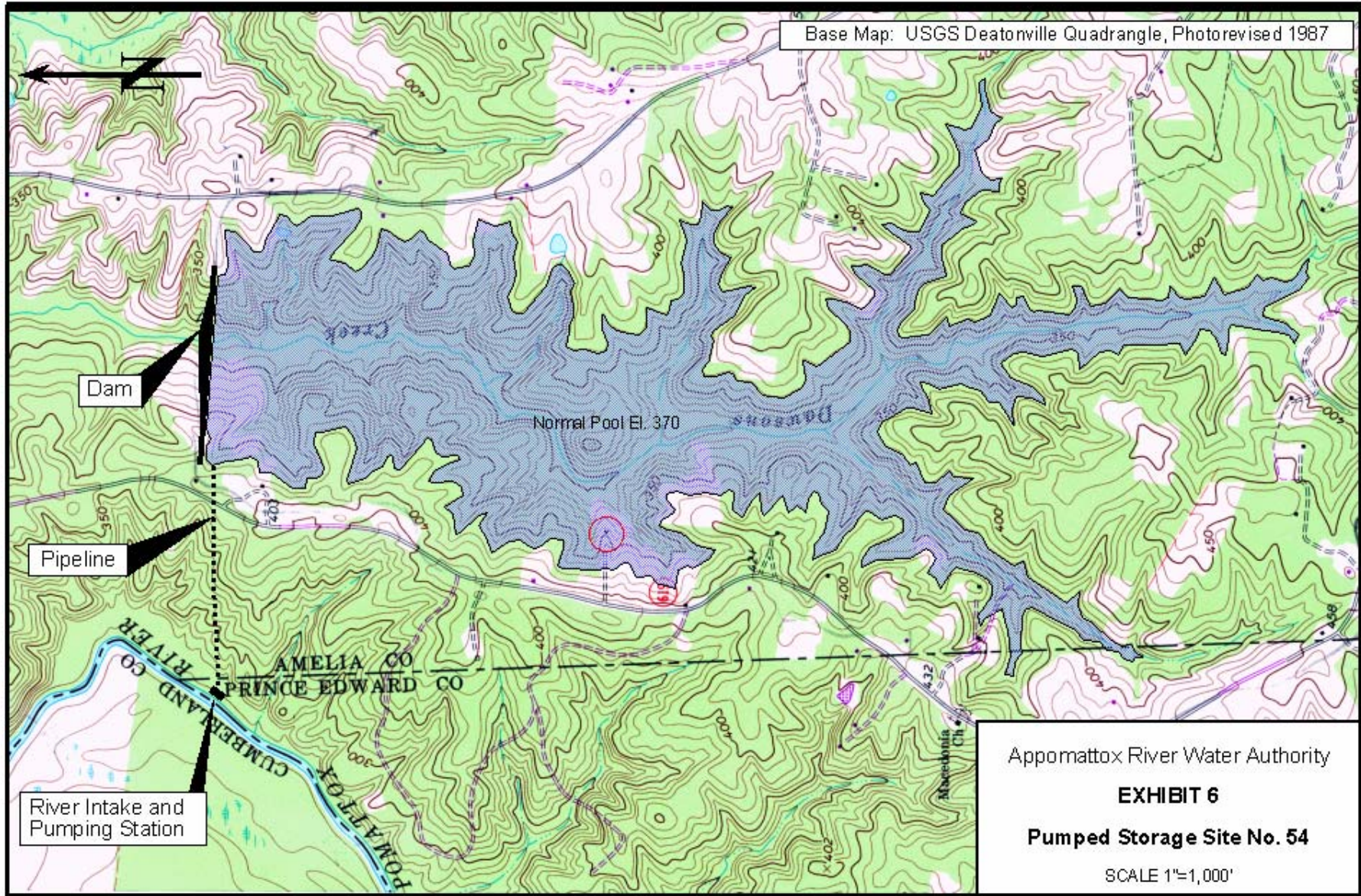
October 2003 Alternatives – Analysis Amelia County Sites

<u>Site</u>	<u>Name</u>	<u>Safe Yield</u>	<u>Wetlands (Acres) Preliminary*</u>	<u>Other</u>	<u>Cost ** (\$1000)</u>
#47	Stock Creek	35.2	282	-	\$47,400
#52	Sandy Creek	73.0	324	-	\$78,200
#54	Dawson's Creek	32.7	92	Saylor's Creek Battlefield	\$65,300

* Based on National Wetlands Inventory

** Does not include Environmental Mitigation





Import Point!!!!!!!!!!!!!!

- Host locality approval
- Can be difficult
- Amelia talks – 3 years





Questions???